

Standard Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method¹

This standard is issued under the fixed designation D473; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

^{ε1} NOTE—IP information was removed editorially in March 2016.

1. Scope

1.1 This test method covers the determination of sediment in crude oils and fuel oils by extraction with toluene. The precision applies to a range of sediment levels from 0.01 to 0.40 % mass, although higher levels may be determined.

NOTE 1—Precision on recycled oils and crankcase oils is unknown and additional testing is required to determine that precision.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific warning statements, see 5.1.1.6 and 6.1.

2. Referenced Documents

2.1 ASTM Standards:²

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products (API MPMS Chapter 8.1)

D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products (API MPMS Chapter 8.2)

D5854 Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products (API MPMS Chapter 8.3)

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and the API Committee on Petroleum Measurement, and is the direct responsibility of Subcommittee D02.02/COMQ on Hydrocarbon Measurement for Custody Transfer (Joint ASTM-API).

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

2.2 API Standards:³

Chapter 8.1 Manual Sampling of Petroleum and Petroleum Products (ASTM Practice D4057)

Chapter 8.2 Automatic Sampling of Petroleum and Petroleum Products (ASTM Practice D4177)

Chapter 8.3 Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products (ASTM Practice D5854)

2.3 ISO Standard:⁴

5272 Toluene for industrial use—Specifications

3. Summary of Test Method

3.1 Extract test portion of a representative oil sample, contained in a refractory thimble, with hot toluene until the residue reaches constant mass. The mass of residue, calculated as a percentage, is reported as *sediment by extraction*.

4. Significance and Use

4.1 A knowledge of the sediment content of crude oils and fuel oils is important both to the operation of refining and the buying or selling of these commodities.

5. Apparatus

5.1 Usual laboratory apparatus and glassware, together with the following are required for this test method.

5.1.1 *Extraction Apparatus*—Use the apparatus illustrated in Figs. 1 and 2 and consisting of the elements described in 5.1.1.1 – 5.1.1.3.

5.1.1.1 *Extraction Flask*—Use a wide-neck (Erlenmeyer) flask of 1-L capacity, with a minimum external neck diameter of 50 mm, for the procedure.

³ Available from American Petroleum Institute (API), 1220 L. St., NW, Washington, DC 20005-4070, <http://api-ec.api.org>.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.